

CLAIMS

1. A GCR1 polypeptide or a GCR2 polypeptide, or a fragment, homologue, variant or derivative thereof.
- 5 2. A polypeptide according to claim 1, which has at least 50% homology to a sequence shown in SEQ ID NO: 2.
- 10 3. The polypeptide of claim 2, which has at least 60% homology to a sequence shown in SEQ ID NO: 2.
4. The polypeptide of claim 3, which has at least 70% homology to a sequence shown in SEQ ID NO: 2.
- 15 5. The polypeptide of claim 4, which has at least 80% homology to a sequence shown in SEQ ID NO: 2.
6. The polypeptide of claim 5, which has at least 90% homology to a sequence shown in SEQ ID NO: 2.
- 20 7. The polypeptide of claim 6, which has at least 95% homology to a sequence shown in SEQ ID NO: 2.
8. A nucleic acid encoding a polypeptide according to claim 1, or a fragment, homologue, variant or derivative thereof.
- 25 9. A nucleic acid comprising a sequence of 25 contiguous nucleotides of the nucleic acid of claim 8.
- 30 10. A nucleic acid comprising a sequence of 15 contiguous nucleotides of the nucleic acid of claim 8.
11. A nucleic acid having at least 90% homology with the sequence set forth in SEQ ID NO: 1, or a fragment, variant or derivative thereof.

12. A nucleic acid comprising a sequence of 25 contiguous nucleotides of the nucleic acid of claim 11.
13. A nucleic acid comprising a sequence of 15 contiguous nucleotides of the nucleic acid of claim 11.
- 5 14. A nucleic acid having at least 75% homology with the sequence set forth in SEQ ID NO: 3, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, SEQ ID NO: 8 or SEQ ID NO: 9, or a fragment, variant or derivative thereof.
- 10 15. A nucleic acid comprising a sequence of 25 contiguous nucleotides of the nucleic acid according to claim 14.
16. A nucleic acid comprising a sequence of 15 contiguous nucleotides of the nucleic acid according to claim 14.
- 15 17. The complement of a nucleic acid sequence according to claim 8.
18. The complement of a nucleic acid sequence according to claim 11.
19. The complement of a nucleic acid sequence according to claim 14.
- 20 20. A nucleic acid according to claim 8, comprising one or more nucleotide substitutions, wherein such substitutions do not alter the coding specificity of said nucleic acid as a result of the degeneracy of the genetic code.
- 25 21. A nucleic acid according to claim 11, comprising one or more nucleotide substitutions, wherein such substitutions do not alter the coding specificity of said nucleic acid as a result of the degeneracy of the genetic code.
- 30 22. A nucleic acid according to claim 14, comprising one or more nucleotide substitutions, wherein such substitutions do not alter the coding specificity of said nucleic acid as a result of the degeneracy of the genetic code.
23. A polypeptide encoded by a nucleic acid according to claim 8.
- 35 24. A polypeptide encoded by a nucleic acid according to claim 11.

25. A polypeptide encoded by a nucleic acid according to claim 14.
26. A polypeptide according to claim 23, in which the polypeptide comprises a sequence
5 shown in SEQ ID NO: 2 or SEQ ID NO: 4.
27. A polypeptide according to claim 24, in which the polypeptide comprises a sequence
shown in SEQ ID NO: 2 or SEQ ID NO: 4.
- 10 28. A polypeptide according to claim 25, in which the polypeptide comprises a sequence
shown in SEQ ID NO: 2 or SEQ ID NO: 4.
29. A method for identifying a pluripotent cell, comprising detecting the presence of a
polypeptide according to claim 1 or a polypeptide encoded by a nucleic acid encoding a
15 polypeptide according to claim 1, or a fragment, homologue, variant or derivative thereof, or the
expression of a nucleic acid encoding a polypeptide according to claim 1, or a fragment,
homologue, variant, homologue, or derivative thereof, or a nucleic acid having at least 90%
homology with the sequence set forth in SEQ ID NO: 1, or a fragment, variant, homologue or
derivative thereof, or a nucleic acid having at least 75% homology with the sequence set forth in
20 SEQ ID NO: 3, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, SEQ ID NO: 8 or SEQ ID NO: 9,
or a fragment, variant, homologue or derivative thereof.
30. A method according to claim 29, comprising the steps of amplifying nucleic acids from a
putative pluripotent cell using 5' and 3' primers specific for GCRI and/or GCR2, and detecting
25 amplified nucleic acid thus produced.
31. A method according to claim 29, wherein the expression of the nucleic acid sequence is
detected by in situ hybridisation.
- 30 32. A method according to claim 15, wherein the expression of the nucleic acid sequence is
determined by detecting the protein product encoded thereby.
33. A method according to claim 29, wherein the protein product is detected by
immunostaining.

34. A method according to claim 32, wherein the protein product is detected by immunostaining.

5 35. An antibody specific for a polypeptide according to claim 1, a polypeptide encoded by a nucleic acid encoding a polypeptide according to claim 1, or a fragment, homologue, variant or derivative thereof.

10 36. An antibody according to claim 35, which is capable of specifically binding to an extracellular domain of GCR1.

37. A method of using an antibody according to claim 35 for the identification and/ or isolation of a pluripotent cell.

15 38. A pluripotent cell identified by a method comprising detecting the presence of a polypeptide according to claim 1 or a polypeptide encoded by a nucleic acid encoding a GCR1 polypeptide or a GCR2 polypeptide, or a fragment, homologue, variant or derivative thereof, or a fragment, homologue, variant or derivative thereof, or the expression of a nucleic acid encoding a GCR1 polypeptide or a GCR2 polypeptide, or a fragment, homologue, variant or derivative thereof, or a fragment, homologue, variant, homologue, or derivative thereof, or a nucleic acid having at least 90% homology with the sequence set forth in SEQ ID NO: 1, or a fragment, variant, homologue or derivative thereof, or a nucleic acid having at least 75% homology with the sequence set forth in SEQ ID NO: 3, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, SEQ ID NO: 8 or SEQ ID NO: 9, or a fragment, variant, homologue or derivative thereof.

20 25 39. A pluripotent cell identified by a method of using an antibody according to claim 35 for the identification and/ or isolation of a pluripotent cell.

30 40. A method for isolating a gene specifically expressed in a pluripotent cell, comprising the steps of (a) providing a population of cells containing a pluripotent cell; (b) isolating one or more pluripotent cells therefrom and providing single-cell pluripotent cell isolates; (c) amplifying the transcribed nucleic acid present in a single pluripotent cell; (d) conducting a subtractive hybridisation screen to identify transcripts present in pluripotent cells but not in somatic cells; and (e) probing a nucleic acid library with one or more transcripts identified in (d) to clone one or 35 more genes which are specifically expressed in pluripotent cells.

41. A method according to claim 29, in which the pluripotent cell is selected from the group consisting of a primordial germ cell (PGC), an embryonic stem cell (ES) and an embryonic germ cell (EG).

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42. A method according to claim 33, in which the pluripotent cell is selected from the group consisting of a primordial germ cell (PGC), an embryonic stem cell (ES) and an embryonic germ cell (EG).

10 43. A method according to claim 37, in which the pluripotent cell is selected from the group consisting of a primordial germ cell (PGC), an embryonic stem cell (ES) and an embryonic germ cell (EG).

15 44. A method according to claim 40, in which the pluripotent cell is selected from the group consisting of a primordial germ cell (PGC), an embryonic stem cell (ES) and an embryonic germ cell (EG).

20 45. A pluripotent cell according to claim 40, in which the pluripotent cell is selected from the group consisting of a primordial germ cell (PGC), an embryonic stem cell (ES) and an embryonic germ cell (EG).